

Overview of Data Acquisition and Analysis for Future Subcritical Experiments

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Future subcritical measurements

- Subcritical experiments for NCSP will resume in FY12 or FY13.
- Detectors utilized:
 - 2 NPODs
 - SNAP
 - HPGe
- A standard setup will be used:
 - NPOD: 50 cm from the center of the system to the face of the detector.
 - SNAP: 100 cm from the center of the system to the center of the He-3 tube.
 - HPGe: preferred distance?

Future subcritical measurements

- Types of measurements:
- Plutonium systems (and other systems with large intrinsic neutron emission rates):
 - Passive list-mode neutron data
 - Passive gamma data
 - Measurements with Cf-252 Source Ionization Chamber (SIC) ???

Legend:

Green: Will be included in the ICSBEP handbook.

Orange: Will be published in peer review journals and/or presented at conferences.

Future subcritical measurements

- Uranium systems (and other systems with low intrinsic neutron emission rates):
 - Active list-mode neutron data (DT generator or Linatron)
 - Passive list-mode neutron data
 - Passive gamma data
 - List-mode neutron data with an isotropic neutron source
 - Measurements with Cf-252 Source Ionization Chamber (SIC) ???

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Future subcritical measurements

- Data analysis:
 - A consistent data analysis approach will be performed for each measurement campaign.
 - Feynman variance-to-mean method (Hansen-Dowdy or Hage-Cifarelli, gate width(s), and parameters must be determined)*.
 - Other noise techniques (Rossi-alpha, interval distribution, correlation, Bennett variance, zero-count probability, etc...).
 - Gamma data.
 - CSDNA method ???
 - * Additional Feynman data will be published outside the ICSBEP handbook (both Hansen-Dowdy and Hage-Cifarelli, parameters at different gate widths, etc...)

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